

Description

MULTI-STEP STORAGE APPARATUS FOR ADAPTABLY HOLDING DISCS AND DISC STORAGE DEVICES

BACKGROUND OF INVENTION

[0001] This application is a continuation in part of United States Patent Application Ser. No. 10/292,269, filed on 11/11/2002 entitled "APPARATUS FOR HOLDING DISKS", which in turn is a continuation in part of United States Patent Application Ser. No. 10/108,065, filed on Mar. 27, 2002 entitled "APPARATUS FOR STORING DISKS" which is a non-provisional of provisional application 60/278,964 filed on March 27, 2001 the specifications of which are incorporated herein by reference. This application claims the benefit of United States Patent No. D462863, filed on January 19th, 2001 entitled "DISK HOLDER", United States Patent No. D463190, filed on July 10th, 2001 entitled "HOLDER FOR COMPACT DISKS", United States Design Patent Application Ser. No. 29/169479, entitled "HOLDER

FOR COMPACT DISKS", United States Design Patent Application Ser. No. 29/169480, entitled "HOLDER FOR COMPACT DISKS", and United States Design Patent Application Ser. No. 29/169481 entitled "HOLDER FOR COMPACT DISKS." all of which are incorporated herein by reference.

[0002] FIELD OF THE INVENTION

[0003] This invention relates to the field of computer disk storage solutions and provides mechanisms for storing computer disks such as DVDs, disks or any other type of computer readable data and their accompanying storage case.

[0004] DESCRIPTION OF THE RELATED ART

[0005] In the present discussion about current systems, the problems and limitations set forth as existent in the prior art are provided for exemplarily purposes. It should be clear to one of ordinary skill in the art that these problems also exist in other contexts or professions and that the invention may have application in situations other than the ones described herein.

[0006] There are many different ways to store data holding disks such as CD-ROM, audio disks, and DVDs. The most prominent storage solutions are known by those of ordinary skill in the art as "Jewel Box", "Jewel Case", "Slim

Case", "DVD Case" and "Mini-Jewel Case". Although bulky and inconvenient to use, a jewel box is an excellent long-term storage case for a disk because it provides protection from dust, scratches, and breakage. Most storage solutions currently on the market claim to provide equal protection as the jewel box. However, there are many disadvantages with jewel boxes and other types of storage solutions. A jewel box is meant for long term disk storage. Although jewel boxes protect the disk, they do not provide quick and convenient access for placement to and from playback or recording apparatuses such as audio or computer equipment. Furthermore, jewel boxes, sleeves, and other containers that hold disks generally only provide storage and protection for one disk.

[0007] Because of these disadvantages, consumers tend to leave disks out of their cases to save time for quick access. This can potentially harm the disks by increasing odds of scratching the disk or causing other imperfections. Furthermore, consumers that are worried about scratching their disk, yet require quick access, will lay the disk upside down to prevent the "play" side from touching any surface. Since logos and/or other identifying information are not printed on the "play" side, placing the disk upside

down makes it impossible for the user to see the area of the disk that identifies the content of the disk.

[0008] Thus, there is a need for a disk holding apparatus that enables users to easily access the disk without having to endure the process of removing the disk from a case. However, it is also important that disk storage solutions minimize damage from occurring to the "play" side of the disk. Therefore what is desired is a storage apparatus that provides temporary housing for several disks, which adequately protects the disks from scratching and provides quick and convenient access to the disks for easy placement and removal, as well as the ability to view the disk of choice.

SUMMARY OF INVENTION

[0009] An embodiment of the invention comprises an apparatus for holding disks with or without a case in a manner that displays the label side of the disk to the user. In one or more instances, the apparatus embodying the invention comprises an open-faced housing having a plurality of grooves of multiple depths recessed into one or more portions of the housing. Each groove is configured to hold disks and/or their cases so that the user may easily insert and retrieve disks via the grooves. Many different case

sizes for disks exist. Cases that hold DVDs are generally slightly wider than cases that hold CDs. There are however many types of cases that hold CDs, including jewel cases and slim cases. Cases that much thicker than the physical width dimension of a disk are termed "thick cases" and cases that are minimally larger than a disk are termed "thin case" herein. Other embodiments of the invention allow the multiple items to be stored within a single outer slot configured to hold a thick case. This may include the combinations of a thick case or a disk, a thin case or a disk, a thick case or a thin case or a thin case and a disk, or a thick case in place of both a thin case and a disk. The grooves holding a disk may or may not overlap the data carrying portion of a disk depending upon the embodiment of the invention. The open-faced housing may comprise a uniform piece that is formed via an injection mold or any other type of housing that may contain recessed grooves without inhibiting the function of the housing. A computer monitor, computer case, desk, computer printer, or any other place where it would be convenient for a user to store disks may be adapted to incorporate embodiments of the invention. For instance, a cylindrical bundle package of disks could have an open-faced hous-

ing formed into the top of the package where the open-faced housing contains grooves configured in accordance with an embodiment of the invention.

[0010] In the event that the open-faced housing is configured with multiple grooves, each groove may be separated from the other by a distance greater than the thickness of the disks the apparatus is designed to hold. If, for instance, the apparatus is configured to hold disks, the second groove is proximally located a distance from the first that is greater than the thickness of the disk. However, the invention is not limited to spacing the grooves at any particular distance and may contain grooves that are separated by more or less than the thickness of the medium the apparatus is intended to hold. In one embodiment of the invention, each groove acts as a repository for holding disks in a specific position. A groove that is recessed into the top portion of the housing may, for example, be configured to hold CD-ROMs, DVDs, audio CDs, or any other form of data storage in an upright position. In other instances the grooves are configured to hold disks in alternative positions. If the grooves are recessed into the side portion of the housing, the grooves may hold disks in a sideways or other angled position.

[0011] In accordance with an embodiment of the invention, one or more grooves are configured to hold the disks in position by frictionally engaging disks placed into the groove. Each groove may, for example, comprise an insert that holds the disk in place without damaging the surface of the disk. The insert may be made felt, rubber, foam, or any other substance that can be utilized to provide a protective layer between the disk and the housing in which the disk may be placed. The width of each insert depends upon the type of media the apparatus is intended to hold. In one embodiment of the invention, each insert is minimally greater than the thickness of the media the insert will frictionally engage. If, for example, a DVD or CD-ROM is to be held by the insert, the insert comprises an opening large enough to allow the disk to be easily removed, but narrow enough to firmly hold the disk in place. The reader should note however, that not all versions of the invention require an insert and that grooves may be adapted to hold disks by incorporating grooves having an upper and a lower portion into the apparatus. For instance, concave shaped grooves or other angular forms of groove designs are contemplated.

[0012] In one embodiment of the invention the apparatus for

holding at least one disk containing digital media is configured to comprise an open-faced housing and at least one of semicircular disk-hold portion shaped to engage a disk on a non-recordable or recorded portion of the disk when the disk is inserted into said semi-circular disk-hold portion without a protective disk cover. The apparatus described herein may also contain an angled-guide portion connected to the semi-circular disk-hold portion for guiding an edge of the disk into the groove associated with the semi-circular disk-hold portion. The semi-circular disk-hold portion is typically recessed into said open-faced housing but could also extrude from the open-faced housing. The open-faced housing can be made of a single continuous portion (e.g., via injection molding) or multiple elements and each of the semi-circular disk hold portions can be positioned at an incline. For purpose of marketing each open-faced housing may comprises a portion for placement of a graphics image. The open-faced housing may also contain at least one pair of a successively narrower protective-case-hold portion interposed with a corresponding successively narrower angled-guide portion the last pair of which ultimately leads into the semicircular disk-hold portion. The

protective-case-hold portion can fit a protective cover narrower than a DVD case or a jewel case. The outermost protective-case-hold portion typically fits a jewel case and the next innermost protective-case-hold portion fits a protective cover narrower than a jewel case, such as a slim case. Other variations on this theme are a thick case slot for DVD cases with a disk slot indented deeper into the outermost slot.

[0013] In one or more embodiments of the invention, a disk, thin case and thick case width slots are combined with one of the other two width slots. One embodiment combines a DVD case width slot with a further indented disk width slot. One embodiment combines a jewel case width slot with a further indented disk width slot. One embodiment combines a slim case width slot with a further indented disk width slot. One embodiment combines a jewel case width slot with a slim case width slot. Another embodiment is created by combining all three width slots together. This embodiment combines a jewel case width slot at the outer level with a slim case width and disk width slot both at an inner level thereby providing a slot that can hold either a jewel case, or both a slim case and disk in the same slot when the jewel case is not present. An-

other embodiment could have a DVD case width slot as the outermost slot and employ a jewel or slim width slot with a disk width slot.

[0014] In one embodiment of the invention the open-faced housing is formed into the top cover of a cylindrical bundle package and contains a conical indentation to hold a writing implement. Alternatively, the open-faced-housing can be formed into a vertically oriented configuration for mounting on a vertical surface such as a wall or computer monitor. The vertically oriented configuration may have a paper holder mounted on the reverse side. The open-faced housing may also contains semi-circular disk-hold portions arranged substantially parallel to the longest axis of the open-faced housing and contain a means for modularly connecting a plurality of the open-faced housings to one another.

BRIEF DESCRIPTION OF DRAWINGS

[0015] FIG. 1 illustrates an example of an angled view of the front and top of the media storage apparatus in accordance with one embodiment of the invention.

[0016] FIG. 2 provides an example of the interior portion of each groove designed to frictionally engage disks in accordance with one embodiment of the invention.

- [0017] FIG. 3A and 3B illustrate a cradle groove in accordance with an embodiment of the invention.
- [0018] FIG. 4 illustrates an example of an angled view of the bottom of the open-faced housing showing recessed central portion in accordance with an embodiment of the invention.
- [0019] FIG. 5 illustrates an example of a side view of the open-faced housing showing recessed grooves for disk storage in accordance with an embodiment of the invention.
- [0020] FIG. 6 illustrates a removable set of inserts adapted to be placed within open-faced housing in accordance with one embodiment of the invention.
- [0021] FIG. 7 illustrates an enlarged version of a stand (rear and side view) for the open-faced housing in accordance with one embodiment of the invention.
- [0022] FIG. 8 illustrates a top view of the open-faced housing with focus on a front portion and set of removable inserts in accordance with an embodiment of the invention.
- [0023] FIG. 9 illustrates a rear view of the open-faced housing in accordance with one embodiment of the invention.
- [0024] FIG. 10 illustrates a rear view of the open-faced housing in accordance with one embodiment of the inventionFIG. 11 illustrates a top view of the open-faced housing with

focus on a front portion and set of removable inserts in accordance with an embodiment of the invention.

[0025] FIG. 12 illustrates an example of a side view of the open-faced housing showing recessed grooves for disk storage in accordance with an embodiment of the invention.

[0026] FIG. 13 illustrates an example of an angled view of the front and top of the media storage device in accordance with one embodiment of the invention.

[0027] FIG. 14 illustrates an example of an angled view of the bottom of the open-faced housing showing recessed central portion in accordance with an embodiment of the invention.

[0028] FIG. 15A illustrates an example of an angled view of the front and top of the media storage apparatus embodiment of a semi-circular disk holding open-faced housing.

[0029] FIG. 15B illustrates an example of a side cross sectional view of the grooves of FIG. 15A.

[0030] FIG. 16A illustrates an example of an angled view of the front and top of the media storage apparatus embodiment of an open-faced housing with angled-guides leading into the semi-circular disk holding grooves.

[0031] FIG. 16B illustrates an example of a side cross sectional view of the grooves of FIG. 16A.

[0032] FIG. 16C shows a front view of the semi-circular disk hold portion configured in accordance with an embodiment of the invention.

[0033] FIG. 17A illustrates an example of an angled view of the front and top of the media storage apparatus embodiment of an open-faced housing with protective-case-hold portions leading into angled-guide portions leading into smaller protective-case-hold portions leading into semi-circular disk holding grooves.

[0034] FIG. 17B illustrates an example of a side view of the grooves of FIG. 17A.

[0035] FIG. 17C illustrates a close up view of one of the grooves in FIG. 17A.

[0036] FIG. 17D illustrates an example of the apparatus holding a jewel case in one groove, a mini jewel case in another groove and a disk without a protective case in another groove.

[0037] FIG. 18 illustrates an example of the apparatus embedded into a compact disk bundle package top cover. This figure also shows the indentations for writing implements to be inserted vertically and horizontally.

[0038] FIG. 19 illustrates an example of a vertical embodiment of the apparatus. This embodiment may be placed in a sub-

stantially vertical orientation.

[0039] FIG. 20 illustrates an example of a vertically orient embodiment of the apparatus mounted on the reverse side of a computer mounted paper holder. This figure also shows a vertical hanging mount for hanging the apparatus over a cubicle wall.

[0040] FIG. 21 illustrates an example of an angled view of the front and top of the media storage apparatus with grooves substantially parallel to the long axis of the apparatus whereby the apparatus can be modularly connected to another such apparatus to create an apparatus capable of storing more disks.

[0041] FIG. 22A illustrates an example of a thick case width slot with a further indented disk width slot.

[0042] FIG. 22B illustrates an example of a thick case width slot with a ramp leading into a disk width slot for guiding a disk into place.

[0043] FIG. 22C illustrates an example of a ramp leading to a thick case width slot with a ramp leading to a disk width slot.

[0044] FIG. 22D illustrates the top view of FIG. 22C.

[0045] FIG. 23A illustrates an example of a slim case width slot with a further indented disk width slot.

[0046] FIG. 23B illustrates an example of a slim case width slot with a ramp leading into a disk width slot for guiding a disk into place.

[0047] FIG. 23C illustrates an example of a ramp leading to a slim case width slot with a ramp leading to a disk width slot.

[0048] FIG. 23D illustrates the top view of FIG. 23C.

[0049] FIG. 24A illustrates an example of a thick case width slot with a further indented thin case width slot.

[0050] FIG. 24B illustrates an example of a thick case width slot with a ramp leading into a thin case width slot for guiding a disk into place.

[0051] FIG. 24C illustrates an example of a ramp leading to a thick case width slot with a ramp leading to a thin case width slot.

[0052] FIG. 24D illustrates the top view of FIG. 24C.

[0053] FIG. 25A illustrates an example of a thick case width slot with two further indented slots, a thin case width slot and a disk width slot.

[0054] FIG. 25B illustrates an example of a thick case width slot with two further indented slots, a thin case width slot and a ramp leading into a disk width slot for guiding a disk

into place.

[0055] FIG. 25C illustrates an example of a thick case width slot with two further indented slots, with a ramp leading to a thin case width slot and a ramp leading to disk width slot.

[0056] FIG. 25C2 illustrates an example of a ramp leading to a thick case width slot and thin case width slot, the jewel case width slot having two further indented slots, a thin case width slot and a ramp leading to disk width slot.

[0057] FIG. 25D illustrates the top view of FIG. 25C.

[0058] FIG. 26 illustrates a modular component embodiment of the invention.

[0059] FIG. 27A illustrates the top view of an embodiment of the invention used as a mailer and horizontal holder combination.

[0060] FIG. 27B illustrates the side view of FIG. 27A.

[0061] FIG. 28A illustrates the front view of an embodiment of the invention for use as a mailer and vertical holder combination.

[0062] FIG. 28B illustrates the side cut-away view of FIG. 28A.

DETAILED DESCRIPTION

[0063] A multi-step storage apparatus for holding disks and disk storage devices is described. In the following description

numerous specific details are set forth in order to provide a more thorough understanding of the present invention. It will be apparent, however, to one skilled in the art, that the present invention may be practiced without incorporating all aspects of the specific details described herein. In other instances, well-known features have not been described in detail so as not to obscure embodiments of the invention.

[0064] The multi-step storage apparatus described herein is designed to house a disk (e.g., a compact disk) of any size or shape in a functional manner. Embodiments of the invention comprise an apparatus for holding disks with or without a case in a manner that displays the label bearing side of the disk to the user. In one or more instances the apparatus embodying the invention comprises an open-faced housing having a plurality of grooves recessed into a portion of the housing. Any conventional or unconventional Compact Disk (disk), CD-ROM, CD-R, CD-RW, or DVD containing, for example, any audio or visual information including music, movies, software or any combination thereof can be stored by embodiments of the invention. The term "disk" is utilized to represent circular disk 120 in FIG. 1, for the sake of convenience only; the term is not

meant to be limited solely to compact disks, but may represent any data storage solution. Disk 120 may, for example, represent a CD-ROM, CD-R, DVD, CD-RW, or computer readable objects having other shapes. Thus, the storage apparatus may be adapted for use with square, rectangular, or any other angled or non-angularly shaped data storage solution. Each groove is configured to hold disks and/or their cases so that the user may easily insert and retrieve disks via the grooves. Many different case sizes for disks exist. Cases that hold DVDs are generally slightly wider than cases that hold CDs. There are however many types of cases that hold CDs, including jewel cases and slim cases. Cases that much thicker than the physical width dimension of a disk are termed "thick cases" and cases that are minimally larger than a disk are termed "thin case" herein. An example of a thick case would be a jewel case or DVD case that is roughly ten times thicker than an actual disk. An example of a thin case would be a disk sleeve or slim case that closely covers the disk. Other embodiments of the invention allow the multiple items to be stored within a single outer slot configured to hold a thick case. This may include the combinations of a thick case or a disk, a thin case or a disk, a thick case or a thin

case or a thin case and a disk, or a thick case in place of both a thin case and a disk. The grooves holding a disk may or may not overlap the data carrying portion of the disk depending upon the embodiment of the invention. The open-faced housing may comprise a uniform piece that is formed via an injection mold or any other type of housing that may contain recessed grooves without inhibiting the function of the housing. A computer monitor, computer case, desk, computer printer, or any other place where it would be convenient for a user to store disks may be adapted to incorporate embodiments of the invention. For instance, a bundle package of disks could have an open-faced housing formed in the top cover wherein the open-faced housing contains grooves configured in accordance with an embodiment of the invention.

[0065] FIG. 1 shows an example of an open-faced housing configured in accordance with an embodiment of the invention. The apparatus is designed to provide the user with a place for quickly accessing disks. Thus disks placed in the apparatus are inserted without a jewel case or any other form of packaging material. Grooves 102-112 are recessed into a portion of open-faced housing 100 and each groove is configured to hold disk 120 in an upright

position. Each groove is configured to hold disk 120 so that the user may insert disk 120 (e.g., a disk, DVD, and/or any other type of data storage media) into the grooves. The invention contemplates the inclusion of grooves 102–112 of varying size and depth into open-faced housing 100. Thus, grooves 102–112 may comprise any type of indentation or depression adapted to hold disk 120 in an upright position.

[0066] Open-faced housing 100 may comprise a uniform piece that is formed via an injection mold process. In this instance the open-faced housing is made of plastic or some other type of polymer based compound. However, the invention contemplates the use of any substance that can be molded to form a shape having recessed grooves (e.g., wood, metal, etc.). In one embodiment of the invention the uniform piece that forms the open-faced housing is a single piece molded into a shape that contains recessed grooves although it is important to note that the invention is not limited to instances where one uniform piece forms the open-faced housing. Any number of pieces may be coupled together to form a shape that has a plurality of grooves recessed into a portion of the structure. However, a single piece may also form open-faced housing. For in-

stance, a single piece of plastic could be shaped to form the apparatus embodying aspects of the invention.

[0067] In some instances the open-faced housing is integrated into devices having a purpose other than the storage of disks. For example, the open-faced housing may be part of any other type of device or housing adaptable to contain recessed grooves for holding data storage solutions without inhibiting the function of the housing. A computer monitor, computer case, desk, computer printer, or any other item where it would be convenient for a user to store disks may be adapted to become an open-faced housing having recessed grooves configured to hold a disk in an extended position. It should be understood by one of ordinary skill in the art that open-faced housing 100 may take on any size and shape, as well as house any number of disk's to be stored vertically, horizontally, or in any other position. In each instance, open-faced housing may hold any form of digital media without requiring any additional storage solutions. For instance, a jewel case or any other form of disk packaging is not required in order to hold the data storage solutions. In one embodiment of the invention open-faced housing 100 is designed to look "sleek" and "high-tech" by rounding the edges to enhance

consumer appeal and encourage impulse buying. However, the invention may take other forms or shapes that incorporate the functionality described herein.

[0068] In the event that the open-faced housing is configured with multiple grooves, each groove 102-112 may be separated from the other by a distance greater than the thickness of the disks the apparatus is designed to hold. If, for instance, the apparatus embodying the invention is configured to hold disk 120 and disk 120 represents a disk, the second groove is proximally located a distance from the first that is greater than the thickness of the disk. Thus, the distance between groove 102 and groove 104 is typically greater than the thickness of disk 120. However, the invention is not limited to spacing the grooves at any particular distance and may contain grooves that are separated by more or less than the thickness of the medium the apparatus is intended to hold.

[0069] In one embodiment of the invention, each groove 102-112 acts as a receptacle for holding disk 120 in a specific position. A groove that is recessed into the top portion of the housing may, for example, be configured to hold CD-ROMs, DVDs, or CD-Rs in an upright or extended position (see e.g., groove 102). In other instances grooves

102–112 are configured to hold disks in alternative positions. If the open-faced housing is positioned upright (e.g., where groove 112 is located closet to the portion of the housing that is in contact with a physical surface) grooves 102–112 are considered recessed into the top portion of the housing. However, grooves may be adapted to hold disks in a sideways or other angled position. Open-faced housing 100 may have a portion 122 designed to display identifying information such as a company logo or other graphic image. Identifying information may be attached to the area in the form of a sticker, engraving, or other printing method. It should also be noted that any company could use this area to brand the product by placing their company logo in its place.

[0070] It is important to note that although the term open-faced housing is used for illustrative purposes, an embodiment of the invention also contemplates the use of housings that may be covered so as to provide further protection for disks held within the recessed grooves of the housing. Thus, for example, open-faced housing 100 may be configured to also include a cover that protects the surface of the disks placed in grooves 102–112. Open-face housing 100 is typically positioned so that the user can view the

front portion (non-play side) of disk 120. The top portion of the open-faced housing may be positioned at an angle that allows the user to see a front portion of each disk.

The apparatus may, for instance, sit at an angle that positions each groove on a plane that is approximately 30 degrees different from the surface upon which the apparatus is placed. However, the invention contemplates embodiments using various other positions and may, for example, be adapted so that the plane each groove sits at is any angle. Embodiments of the invention may sit vertically, horizontally, upside down, or at any position in-between.

[0071] FIG. 2 provides an example of the interior portion of each groove in accordance with one embodiment of the invention. Each groove 210-216 is configured to hold disk 218 in position by frictionally engaging a disk placed into the groove. Inner groove 208, for example, may comprise an insert 200 that holds the disk in place without damaging the surface of disk 218. Open-faced housing 220 may have any number of grooves and may be adapted to contain more or less than the number of grooves illustrated in FIG. 1. Insert 200 may be made felt, rubber, foam, or any other substance that can be utilized to provide a protec-

tive layer between disk 218 and housing 220 in which disk 218 may be placed. In one embodiment of the invention, the inserts keep disk 218 or other form of digital media secure by keeping the front or back of the item placed within the insert from touching the open-faced housing to avoid scratching the disk surface. Inserts 200 may also be configured to hold disk 218 snugly in place. The width of each insert 200 depends upon the type of disk 218 the apparatus is intended to hold. In one embodiment of the invention, each insert 200 is minimally greater than the thickness of the disk the insert will frictionally engage. If disk 218 is, for example, a DVD or CD-ROM, insert 200 comprises an opening large enough to allow the disk to be easily removed, but narrow enough to firmly hold the disk in place.

[0072] Grooves 210, 212, 214 and 216 may be recessed at varying depths. For example, groove 216 located toward the back portion of open-faced housing 220 may have a depth less than groove 214. In some instances however, each groove is approximately the same depth but open-faced housing is positioned at an angle so that the top portion of each disk sits above the preceding disk. Referring back to FIG. 1, for example, a disk placed in groove

102 sits at a lower position than a disk placed in groove 112. The invention contemplates the use of any type mechanism designed to position open-faced housing 100 at an incline. For example, in FIG. 7 stand 700 can be used in order to move open-faced housing 100 in FIG. 1 into an inclined position so that the disks are arranged in a plane that slants upwards. Thus, the back portion of open-faced housing 100 is typically higher than front portion 124. The stand may comprise a wire frame or some other type of substance (e.g., plastic, wood, or any other solid substance). When a wire frame is utilized, the wire frame may be inserted into open-faced housing 100 in holes or other coupling mechanisms located underneath the housing 220 in Fig 2. The frame stand is optional and the housing may be formed in such a way that it has its own stand integrated into the housing. Stand 700 can be made of any solid material that can support open-faced housing 100 and force it to stand so that the front is flush and touching any flat surface. Thus stand 700 enables front portion 124 to lie flat on the surface when the stand 700 is attached. It is important to note that the purpose of stand 700 is used to help lift the open-faced housing into an inclined position to provide easier viewing

and access to disks held within the grooves. However, it is not imperative to have stand 700 attached to effectively use open-faced housing 100. The housing can still be configured to reside at an incline without stand 700.

[0073] FIG. 3a illustrates an alternative configuration for each groove in accordance with an embodiment of the invention. One or more of the grooves illustrated in FIG. 1, for example, may be configured to hold disk 300 in a cradle portion 302 that provides the disk with a place to rest. Cradle portion 302 need not frictionally engage the disk, but may contain a buffer that prevents the disk from damage. However, in one embodiment of the invention no such buffer is present and disk 300 sits in cradle 302. FIG. 3b shows a side view of cradle 302 as it is integrated into open-faced housing 304. In this instance groove 305 does not contain any protective insert, but is instead configured in to hold a disk without a jewel case. Grooves 305 may, for instance, have a base that utilizes a step or concave shape to hold circular objects and/or other shaped objects of varying size. This concave portion is referred to in one embodiment of the invention as cradle 302. However, cradle 302 need not always to be concave. Rather cradle 302 comprises a center portion (302) lower than the two

side portions (310 and 308).

[0074] As used in this description, the terms "up", "down", "top", "bottom", etc., refer to housing 100 when in the orientation illustrated in FIG. 1. FIG. 4 shows an embodiment of the invention from a bottom view perspective. Grooves 102–112 are recessed into open-faced housing and disk 120 may be positioned in each groove. Center portion 150 represents cradle 302 in the previous figure. However, center portion 150 may also provide a location for placement of inserts 200 as depicted in FIG. 2. Center portion 150 is not required in order to properly hold disk 120 in position but may be optionally included so as to provide the manufacture with design flexibility.

[0075] FIG. 5 illustrates a side view of the open-faced housing in accordance with an embodiment of the invention. Inserts 201–206 may protrude from grooves 102–112 and can therefore be removed from open-faced housing 100 for purposes of replacement or design flexibility. Inserts 201–206 may have beveled edges in front and back of each groove to increase ease of disk access to and from the groove. However, grooves may also be configured to hold digital media without any insert.

[0076] In one embodiment of the invention inserts 201–206 are

not removable and are part of the housing itself. However, in other instances inserts 201–206 are incorporated into a removable portion that snugly sits in open-faced housing 100 within portion 150. An example of a removable set of inserts 600 is shown in FIG. 6. Removable set of inserts 600 may comprise multiple slots configured to hold the digital media. In one embodiment of the invention, each slot is approximately 1.5 times the width of the digital media the slot is intended to store. However, the invention contemplates the use of slots having any width that snugly holds a disk. The slots are typically centered in grooves 102–112 but may be located in other positions. The removable set of inserts may be comprised of closed cell foam, rubber, or some other type of substance that will hold a disk in an extended position, but still allow the user to pull the disk from the slot.

[0077] FIGS. 8 and 9 illustrate a top view and back view in accordance with one embodiment of the invention. FIG. 10 comprises a rear view of the open-faced housing in accordance with one embodiment of the invention. In the embodiment illustrated open-faced housing 100 comprises grooves 102–112 and lacks center portion 150 (see e.g., FIG. 14). Thus, FIG. 10 illustrates that center portion

150 is not required for purposes of holding disks.

Grooves 102–112 may be recessed directly into open-faced housing 100, such that center portion 150 is optional. For instance, referring now to FIG. 11 that illustrates a top view with focus on a front portion and set of removable inserts in accordance with an embodiment of the invention, center portion 150 is shown in a manner that is integrated uniformly into housing 100. Thus, housing 100 is a single piece in one embodiment of the invention, but may also be separated into two or more pieces.

[0078] FIG. 12 comprises an example of a side view of the open-faced housing configured as a single piece and showing recessed grooves for disk storage in accordance with an embodiment of the invention. Grooves 201–206 may optionally include a non-abrasive substances such a rubber or foam to hold disks into place. FIG. 13 comprises an example of an angled view of the front and top of the disk storage device in accordance with one embodiment of the invention. The device is configured as one piece in this embodiment illustrated in FIG. 13. FIG. 14 comprises an example of an angled view of the bottom of the open-faced housing showing recessed central portion in accor-

dance with an embodiment of the invention. The bottom portion of grooves 102–112 are recessed into housing 100 such that the grooves become part of the housing. Thus, grooves become part of a recessed central portion couple to or part of housing 100.

[0079] FIG. 15A shows an example of an open-faced housing configured in accordance with an embodiment of the invention. The apparatus is designed to minimize possible damage to the recordable section of the disk by providing a semi-circular disk-hold portion that is the portion of the invention that physically touches the disk. Thus disks placed in the apparatus are inserted without any form of protective cover. Grooves 102– 112 are recessed into a portion of the open-faced housing 100 and each groove is configured to hold a disk in an outward orientation from the open-faced housing.

[0080] FIG. 15B shows the side view of grooves 102–112 in the open-faced housing 100 of FIG. 15A. Note that although the use of the semi-circular disk-hold portion in this description provides a solid support for the disk, piecewise linear portions could also be used. A possible embodiment of this would be a cutout of half of a hexagonal tube, contacting the disk in three places, albeit contacting

the disk via noncontiguous grooves. Any other geometric shape that can hold a groove capable of holding a disk without a protective case with or without touching the non-recordable portion of the disk falls within the scope of this invention.

[0081] FIG. 16A shows an example of an open-faced housing configured in accordance with an embodiment of the invention. The apparatus is designed to minimize possible damage to the recordable or recorded section of the disk by providing an angled-guide portion (e.g., 1600-1605) leading to the semi-circular disk-hold portion for guiding the non-recordable or recorded edge of the disk into the semi-circular disk-hold portion, thereby further reducing the chance of damaging the disk. The angled-guide portion is shaped to assist the user in placing the disk into the semi-circular disk-hold portion. For instance in one embodiment of the invention, angled-guide portion 1600 is sloped outward from at least one groove 112.

[0082] FIG. 16B shows the side view of grooves 102-112 in the open-faced housing of FIG. 16A. Each groove (e.g., 112) is assembled to have a base portion 1606, a first side portion 1607, a second side portion 1608, and optionally at least one angled-guide portion (e.g., 1609, 1610). The

depth and width of the groove depends upon the purpose of the open-faced housing. When a disk, DVD, or other digital media having a circular or otherwise geometric shape is to be stored in the open-faced housing, the depth of the first side portion and second side portion matches or substantially matches the width of the non-recorded edge portion of a disk. Although the depth may be less than, equal to or greater than the non-recorded portion of the disk, the device is typically configured to minimize damage to the recorded portion of the disk that is inserted into the groove. Embodiments of the invention may contain grooves that are deeper than the recordable area of the disk in order to provide more stability. When a disk is inserted into groove 112, the disk rests on base portion 1606 and is held substantially upright by the first side portion 1607 and/or second side portion 1608 protruding from base portion 1606. The width of base portion 1606 varies across different embodiments of the invention depending upon the form of disk the open-faced housing is designed to hold. In each instance, the base portion is slightly wider than the form it is intended to hold (e.g., a disk, a jewel case, a disk, etc...). If a disk without a protective sleeve is to be inserted, the width of

the base portion is set to be approximately the width of the edge portion of the disk. In other instances, the width of the base portion is adjustable either by the user or the manufacturer to fit the size of the item to be inserted. The angled-guide portions 1609 and 1610 are coupled with the first side portion and second side portion and acts as a funnel to the groove (e.g., base portion 1606, first side portion 1607, second side portion 1608), thereby providing a mechanism for guiding disks into the semi-circular disk-hold portion that contains the groove described herein.

[0083] FIG. 16C shows a front view of the semi-circular disk hold portion configured in accordance with an embodiment of the invention. The semi-circular disk hold portion 1614 that is recessed into open-faced housing 100 and configured to minimize contact with the recorded portion 1613 of disk 1615. The non-recorded portion of disk 1615 or an outer edge portion of disk 1615 rests within the semi-circular disk hold portion thereby minimizing the potential for damage to the disk. Embodiments of the invention may utilize grooves that are deep enough to contact the recordable area of the disk in order to provide more stability.

[0084] FIG. 17A shows an example of an open-faced housing configured with an embodiment of the invention. The apparatus is designed to minimize possible damage to the recordable section of the disk by providing an angled-guide portion leading to the semi-circular disk-hold portion for guiding the edge of the disk into the semi-circular disk-hold portion, thereby reducing the chance of damaging the disk. In addition, the groove has a rectangular protective-case-hold portion as the outermost indentation capable of holding a jewel case and a further recessed narrower and deeper protective-case-hold portion. FIG. 17B shows the side view of the grooves in the open-faced housing of FIG. 17A. The width of the groove steps inward to become successively narrower towards the base portion of the groove. FIG. 17C shows a detailed side view of one of the grooves. The outermost protective-case-hold portion 148 is configured to hold something such as a jewel case and is connected to smaller protective-case hold portion 150 via angled-guide portion 149 which may have an angle between 0 and 90 degrees. Protective-case-hold portion 150 is configured to hold a protective case smaller than protective-case hold portion 148. This protective-case- hold portion 150 is connected

via angled-guide portion 151 to semi-circular disk hold portion 152. In this embodiment, each groove is capable of holding a jewel case, mini-jewel case or a disk without a protective cover as shown in FIG. 17D.

[0085] Different embodiments of the invention can be combinatorially created by combining these different protective-case-hold portions with the semi-circular disk-hold portion. For example another embodiment of the invention would include a groove that is configured to hold a jewel case or a disk without a protective case. Another embodiment could hold a mini jewel case or a disk without a protective case, and yet another embodiment could hold a jewel case or a mini jewel case in the next inner protective case portion, without providing a hold portion for a disk without a protective cover. The groove widths of the various portions are such that the apparatus can hold a disk with or without a protective cover by providing substantially parallel planes of minimally greater than the corresponding width of the item to be held. The depths of the grooves are any depth which can provide the sides of the grooves enough support to hold the item in place. In the case of holding a disk without a protective cover, the grooves can be minimally wider than the width of the disk,

and deep enough to not engage the non-recordable or recorded portion of the disk. However, the grooves can be constructed deeper or shallower than this depth so long as the sides of the groove hold the item substantially upright. The grooves for the portions that hold the protective cases can also be minimally wider than the items to be held, and as deep as is necessary to hold the item substantially upright. These depths can be the same as the width of the item, deeper, or shallower than the item's width so long as the item is properly held in place.

[0086] As this description has already detailed other integration points for the invention, such as a computer monitor, computer case, desk, computer printer, or any other item where it would be convenient for a user to store disks, an example of such an embodiment is displayed in FIG. 18. In this embodiment open-faced housing 1800 (which contains grooves / semi-circular disk hold portions as described above) forms the outer case or top cover of a disk bundle package and thereby provides a place to set disks into when burning or using them. In addition, the case also provides a slot 1801 to hold a pen horizontally and a slot to hold a pen vertically 1802.

[0087] Yet another embodiment of the invention is shown in FIG.

19. The open-faced housing configured in accordance with this embodiment is configured for a vertical orientation, possibly for mounting on a wall, cubicle wall or any other substantially vertical surface. FIG. 20 shows a vertical embodiment that can be mounted on the back of a paper holder that is in turn mounted on a computer monitor. Any other orientation that yields grooves for holding disks with or without protective covers in open-faced housings, with or without combination grooves lives within the scope of the invention.

[0088] FIG. 21 shows a modular connecting embodiment of the invention. In this embodiment, the grooves 102, 104, 106 are substantially parallel to the length of the open-faced housing and a connected sideways in order to form devices with greater capacity for storing disks. Any type of connector or coupling mechanism 345, 346 that can be used to attach a plurality of the apparatus falls within the scope of the present invention.

[0089] The term "outer width slot" is defined as the widest and shallowest slot of the apparatus (see e.g., the embodiment of the invention illustrated in FIG. 24A). The slot depicted as having slot width "C" is referred to as an outer width slot and the slot with width "M" is referred to as an "in-

dented width slot" which is indented into the "outer width slot." The word "ramp" as it is used herein refers to the "angled-guide portion", i.e., the portion of the device that guides the intended object into place as the intended object descends into the appropriate width slot. Ramp is also used in order to signify a flat edged guide that is not curved when viewed from the top, and is angled downward and inward into the appropriate width slot. FIG. 22D curved ramp "R1" and straight ramp "R2" are examples of an angled-guide portion or "curved" ramp and a flat edge guide ramp. Curved and flat edge ramps derive their names from the top view of each ramp. Readers should note, however, that other types of ramps accomplishing substantially the same effect, but in a different way are also contemplated as being part of the invention. The ramps may, for instance, still maintain an inward angle for purposes of guiding the disk, but not have a perfectly straight edge when viewed from the side. In FIG. 22B this would mean that ramp "R1" could be concave or convex, but is shown as a straight line for simplicity.

[0090] FIG. 22A shows an embodiment of the invention having a thick case width slot "C" (for example a DVD case or jewel case width slot) with two vertical outer walls leading to a

ledge that is further indented with disk width slot "D". Disk width slot "D" has a side portion on the left that is deeper than the side portion on the right since thick case width slot "C" indents and hence lowers the right side portion of disk width slot "D". Since the left outer width wall coincides with the left side of the disk width slot "D", this has the effect of producing a disk width slot with different depth side portions on each side. By placing the label of the disk against the higher side portion of disk width slot "D", further stability can be achieved than with a slot with shorter side portions. FIG. 22B shows an embodiment of the invention with curved ramp "R1" leading into disk width slot "D". Curved ramp "R1" guides a disk without its protective case into place. FIG. 22C shows an embodiment of the invention with straight ramp "R2" leading to thick width slot with curved ramp "R1" leading to a disk width slot "D". FIG. 22D illustrates the top view of FIG. 22C. Curved Ramp "R1" helps align a disk into the slot. Ramp "R2" is not curved as viewed from the top since the bottom of the jewel case is not curved and is readily aligned with a straight ramp. Curved ramps however can be utilized where a straight ramp is utilized. Although disk width slot "D" in FIG. 22A is shown on the far left of

the diagram, the slot may be placed anywhere in the outer slot with width "C". Placing disk width slot "D" in the middle of thick width slot "C" allows for curved ramps on both sides of disk width slot "D". Disk width slot "D" may be as deep as necessary for the desired application, overlapping the data holding portion of the disk in some embodiments of the invention. FIGS. 22A through 25D are not to scale but show the various portions of the embodiments of the invention. All slots described herein can be as deep as required to keep the intended object in place. Moreover, the width may vary slightly so long as the general purpose of the slot (e.g., storing the intended item in an upright position) is maintained. The slots may be tilted forward or backward so long as an inserted disk remains in place.

[0091] FIG. 23A shows an embodiment of the invention with thin case width slot "M" with a further indented disk width slot "D". FIG. 23B shows an embodiment of the invention with curved ramp "R1" leading into disk width slot "D". Curved ramp "R1" guides a disk into place. FIG. 23C shows an embodiment of the invention with straight ramp "R2" leading to a thin case width slot with curved ramp "R1" leading to a disk width slot. FIG. 23D illustrates the top view of FIG. 23C. Curved ramp "R1" helps align the disk

into the slot. Ramp "R2" is not curved as viewed from the top since the bottom of the thin case is not curved and is readily aligned with a straight ramp. Curved ramps however can be utilized where a straight ramp is utilized. Although disk width slot "D" in FIG. 23A is shown on the far left of the diagram, the slot may be placed anywhere in the outer slot with width "C".

[0092] FIG. 24A shows an embodiment of the invention with thick case width slot "C" with a further indented thin case slot "M". FIG. 24B shows an embodiment of the invention with inner most straight ramp "R2" leading into thin case width slot "M". Inner most straight ramp "R2" guides a thin case into place. FIG. 24C shows an embodiment of the invention with outer most straight ramp "R2" leading to a thick case width slot with inner most straight ramp "R2" leading to a thin width slot. FIG. 24D illustrates the top view of FIG. 24C. Straight ramps "R2" help align the cases with flat bottoms into their respective slots. Although thick case slot "M" in FIG. 24A is shown on the far left of the diagram, the slot may be placed anywhere in the thick case width slot "C". Placing thin case slot "M" in the middle of thick case width slot "C" allows for straight ramps leading into both sides of thin case width slot "M".

[0093] FIG. 25A shows an embodiment of the invention with thick case width slot "C" with two further indented slots, thin case width slot "M" and disk width slot "D". FIG. 25B shows an embodiment of the invention with curved ramp "R1" leading into disk width slot "D". Curved ramp "R1" guides a disk into place. FIG. 25C shows an embodiment of the invention with curved ramp "R1" leading to a disk width slot and straight ramp "R2" leading to a thin width slot. FIG. 25C2 shows an embodiment of the invention with curved ramp "R1" leading to the disk width slot and straight ramp "R2" leading into the thin case width slot. FIG. 25D illustrates the top view of FIG. 25C. Although disk width slot "D" and thin case slot "M" in FIG. 25A are shown on the outer edges of the diagram, the slots may be moved anywhere in thick case width slot "C". Placing disk width slot "D" and thin case width slot "M" away from the edges of thick case width slot "C" allows for straight ramps leading into both sides of disk width slot "D" and both sides of thin case width slot "M".

[0094] FIG. 26 shows a modular component embodiment of the invention with modular snaps 2600, 2601, 2602 and 2603 configured to couple with another modular component. More or less snaps can be utilized with other embodi-

ments of the invention. Outer slot 2606 possesses lateral support walls which lead into further indented slot 2605 and deepest and thinnest slot 2604. The slots shown are centered, but can be justified to one side of the outer slot or the other as previous embodiments have detailed. In addition, the outer slot can house both further indented slots at the same level or as shown with one inside of the other.

[0095] FIG. 27A shows the top view of a horizontally oriented embodiment of the invention allowing at least one disk to be mailed or transported in a compact way while also providing at least one slot for holding disks. Mailer 2700 comprises at least one slot 2703 which can be of any type of slot previously mentioned and is shown here comprising a curved ramp and disk slot for simplicity. Mailed disk indentation 2702 for transporting a disk is shown in cut-away view FIG. 27B on the left side of the diagram as a single disk thick indentation in which to hold the mailed disk. The disk may also be stored on the bottom of mailer 2700 in another embodiment of the invention. The indentation can be deeper if more disks are to be mailed or transported in any way with this embodiment. Finger extraction indent 2701 is shown in FIG. 27A in the upper

right corner and allows for extracting the disk from mailer 2700.

[0096] FIG. 28A shows the front view of a vertically oriented embodiment of the invention allowing at least one disk to be mailed or transported in a compact way while also providing at least one slot for holding disks. Mailer 2800 comprises at least one slot 2803 which can be any type of slot previously described in this document and is generally projected in a non-orthogonal direction from the body of mailer 2800. Disk storage indentation 2802 may be on the front of the back of mailer 2800 and is shown here on the back side of mailer 2800 in FIG. 28B. If the indentation for storing disks is situated on the front of mailer 2800 then a round indentation would be seen on the front of mailer 2800 as was shown in FIG. 27A for mailer 2700, which would also allow for a finger extraction indent in that embodiment.

[0097] The means and method for storing disks should be apparent to those skilled in the art after reading this disclosure. For example, one skilled in the art would recognize that the ramps described herein may be on the front, back or both portions of each of the indented slots for all embodiments described. It should be understood that the fore-

going is illustrative and not limiting and that those of ordinary skill in the art may make obvious modifications without departing from the spirit of the invention. Accordingly, reference should be made primarily to the accompanying claims and the full scope of their equivalents, rather than the foregoing specification, to determine the scope of the invention. Thus an apparatus for storing and holding disks has been described.